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THE GAME FISHES OF INDIA<sup>1</sup>

BY

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*(With one plate and eight text-figures).*

*Continued from page 210 of Vol. xxxix.*

II.—'THE BACHHWA OR BUTCHWA'.<sup>2</sup>

EUTROPICHTHYS VACHA (HAMILTON).

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INTRODUCTION.

There are two types of Catfishes which are termed *Butchwa* among anglers. In Bengal, where both species are found in abundance, the name *Bāchchā* is invariably applied to *Eutropichthys vacha* (Ham.), an elegant fish with a large mouth, as in the 'Indian Trout' (15).<sup>3</sup> The other species, known as *Garua* or *Garua*

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<sup>1</sup> Published with permission of the Director, Zoological Survey of India.

<sup>2</sup> Also known as *Batchwa*, *Batchua*, *Vachā* and *Bāchchā*.

<sup>3</sup> Numerals in thick type within brackets refer to the serial numbers of the various publications listed in the bibliography at the end of the paper.

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*Bāchchā*, has a much smaller mouth and, though belonging to the same family *Schilbeidae*, is included in a separate genus, *Clupisoma* Swainson. It may be noted that in all books on angling in India the accounts of these two types of *Butchwa* are greatly confused. It is proposed, therefore, to give a description of the true *Bāchchā* in this article, and to reserve the treatment of *Clupisoma garua* (Hamilton) for the next.

#### TAXONOMY.

##### *Nomenclature and Systematic Position.*

The species was originally described by Hamilton (13) as *Pimelodus vacha* and was included by him among a heterogeneous assemblage of Catfishes. Swainson (21) assigned it to the genus *Pachypterus* and named it *P. punctatus*, while Cuvier and Valenciennes (4) considered it to be a *Bagrus*. Bleeker (2) also regarded it as a *Bagrus* in the first instance, but later he (3) defined its precise limits and proposed for its reception a new genus *Eutropiichthys* in his group Pangasii. The genus was defined as:

'Cirri 8, nasales 2, supramaxillares 2, inframaxillares 4. Dentes maxillaris pluriseriati. Dentes vomerini vel palatini nulli. Oculi superi. Rictus sub oculo productus.'

This diagnosis appears to have been based on Hamilton's original description and figure, for it is stated therein 'In both are crowded numerous sharp teeth, of which there are none on the palate.' Günther (11), without examining any specimen of Hamilton's species, accepted Bleeker's genus; but Day (5) pointed out that in *E. vacha* there are

'villiform teeth in a triangular spot on the vomer, and in a large pyriform shape on the palate; the whole of these with those on the upper jaw are so closely set together that it may give the appearance on a superficial examination that there are "no teeth on the palate" as remarked by Dr. Günther.'

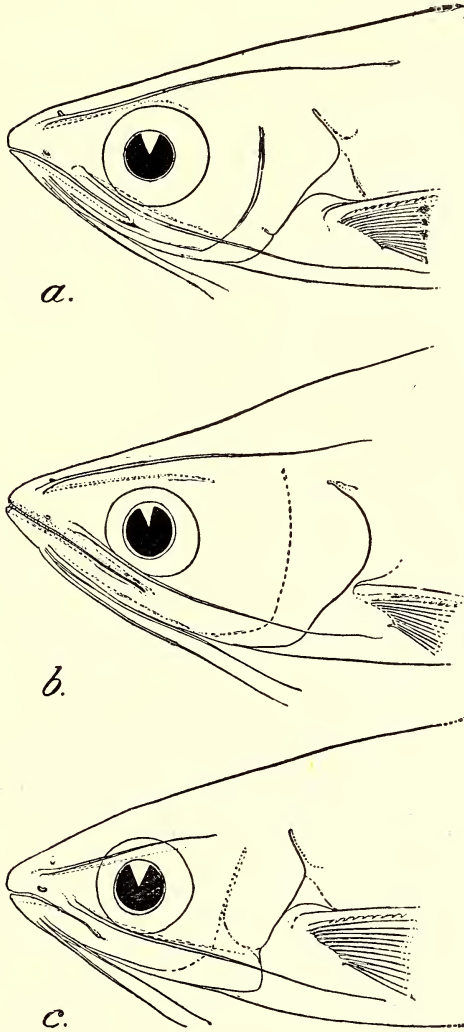
Day (6) was also the first to describe the air-bladder of *E. vacha* as

'narrow, tubiform, placed transversely across the body of the anterior vertebrae, and all but its central portion enclosed in bone, either expanded extremity being within a bony capsule.'

Though in the original definition of *Eutropiichthys* no mention is made of the teeth on the palate and of the nature of the air-bladder, these form the chief diagnostic features of the genus which may be defined as follows:

The body is elongate and compressed. The head is covered with soft skin. The snout is pointed; usually it is sharp but in some specimens it is slightly blunt. There is a narrow median fontanel on the head, commencing slightly behind the posterior nostrils and extending almost to the termination of the occipital

process. The mouth is wide and ascending; it reaches below the orbit or may slightly extend beyond the posterior margin of the orbit. The upper jaw is slightly longer. The nostrils are wide apart. The eyes are lateral and are provided with broad adipose lids.



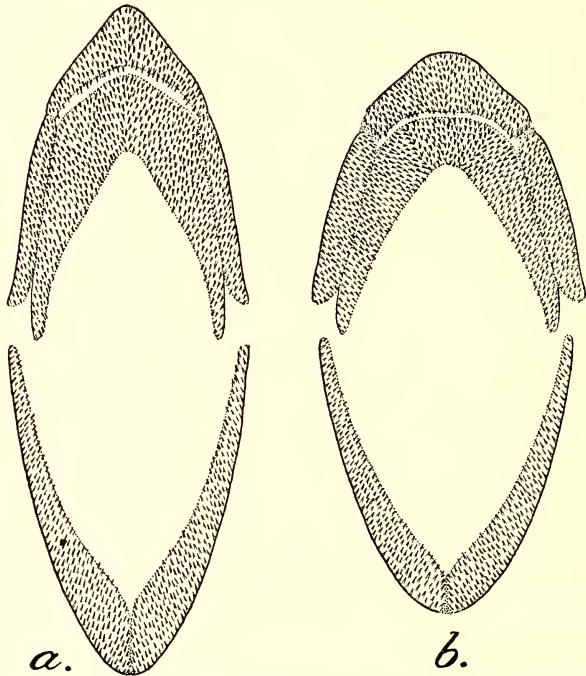
Text-fig. 1. Lateral view of head and anterior part of body of the three species of *Eutropiichthys* Bleeker.

a. *E. goongwaree* (Sykes),  $\times 1\frac{2}{3}$ ; b. *E. zacha* (Ham.)  $\times 1\frac{1}{3}$ ; c. *E. murius* (Ham.)  $\times 1\frac{2}{3}$ .

There are eight barbels, one pair nasal, one pair maxillary and two pairs mandibular.

The jaws are provided with several rows of sharp, villiform teeth; the toothbands are produced backwards at the sides. The

teeth (fig. 2) on the palate form a continuous vomero-palatine band which is also produced at the sides. The band is sometimes interrupted in the middle and sometimes it is so close to the maxillary band that the two appear to be contiguous. The rayed dorsal fin is short, with one spine and seven rays. The adipose dorsal is also short and is situated far behind. The pectoral fin is provided



Text-fig. 2. Dentition of two specimens of *Eutropiichthys vacha* (Ham.).

*a.* Long-snouted specimen from Chittagong, 251 mm. in length without caudal.  $\times 1\frac{1}{2}$ ; *b.* Blunt-snouted specimen, probably from Burma (*A.S.B. Cat.* No. 484), 192 mm. in length without caudal.  $\times 2$ .

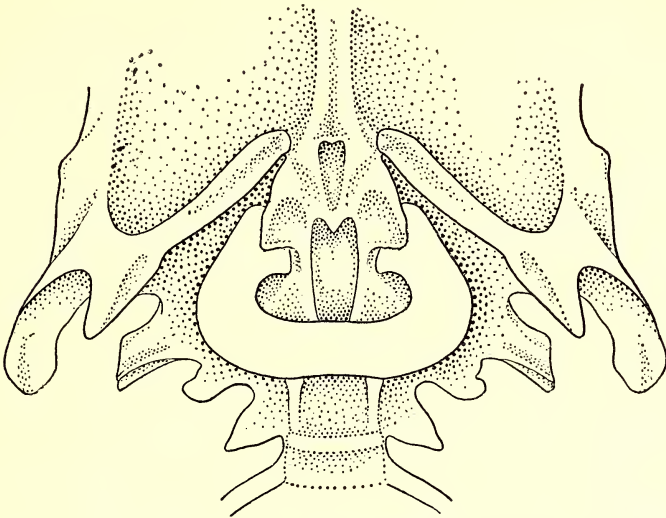
with a spine, while the pelvic fin has only six rays. The anal fin is long, but is separated from the caudal by a considerable distance; it has usually 47-50 rays. The caudal fin is deeply forked.

The gill-openings are wide; the gill-membranes being separated by a deep notch and not confluent with the skin of the isthmus. The branchiostegal rays vary from 5 to 11.

The *air-bladder* (fig. 3) is greatly reduced, tubular and transverse; it lies closely applied to the ventral surface of the anterior vertebrae and forms a circular loop incomplete anteriorly; it is not enclosed by bone but is supported on the dorsal surface by the bony extensions of the transverse processes of the anterior vertebrae.

The characters italicised above are the most important diagnostic features of the genus, and have afforded me a clue to

refer two more species—*Pimelodus murius* Hamilton (13, p. 195) and *Hypophthalmus goongwaree* Sykes (22, p. 369) to the genus



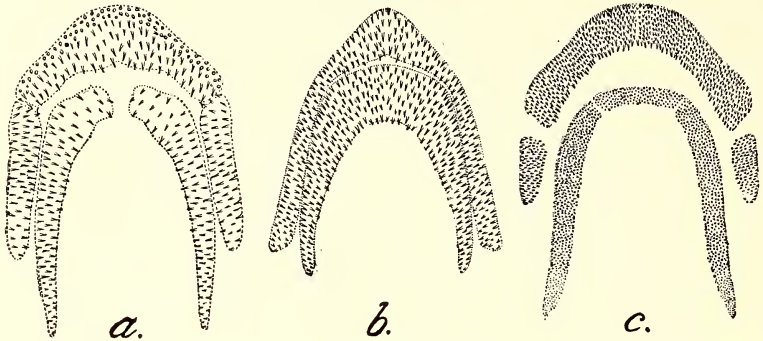
Text-fig. 3. Air-bladder and associated skeletal parts in *Eutropiichthys vacha* (Ham.). Length of specimen 152 mm. without the caudal.  $\times 5$

*Eutropiichthys*. The three species may be distinguished by the following key:

- A. Vomero-palatine band interrupted in middle (fig. 4, a); cleft of mouth extending to below first third of eye; nasal barbel extending to base of dorsal; eye  $2\frac{3}{4}$  in length of head (fig. 1, a). *E. goongwaree* (Sykes).
- B. Vomero-palatine band complete in middle.
  - a. Vomero-palatine band wider than maxillary band (fig. 4, b); branchiostegals 11; cleft of mouth nearly extending to hind border of orbit; nasal barbel rarely extending to hind border of head or slightly beyond; eye  $3-4\frac{1}{2}$  in length of head (fig. 1, b) ... *E. vacha* (Ham.).
  - b. Vomero-palatine band narrower than or just as wide as maxillary band (fig. 4, c); branchiostegals 5; cleft of mouth extending to front edge of eye; nasal barbel extending to short distance behind posterior edge of eye; eye  $3-3\frac{3}{4}$  in length of head (fig. 1, c) *E. murius* (Ham.).

Both *E. goongwaree* and *E. murius* were referred to the genus *Pseudeutropius* Bleeker by Günther (11) and Day (8, 9); though their authors had indicated their close similarity to Hamilton's *Pimelodus vacha*. It is outside the scope of this work to discuss in detail the relationships of the three species. It may, however, be indicated that from the point of view of an angler their specific characteristics should make very little difference. *E. goongwaree* is found in the rivers of the Deccan, and was originally described from the Mota Mola river near Poona. *E. murius* is known from

the 'Rivers of Sind, Orissa, the Jumna and rivers of Bengal and Assam'. *E. vacha* is still more widely distributed and besides northern India it is found in Burma and Siam.



Text-fig. 4. Upper dentition of the three species of *Eutropiichthys* Bleeker. a. *E. goongaree* (Sykes).  $\times 3\frac{2}{3}$ ; b. *E. vacha* (Ham.).  $\times 1\frac{1}{3}$ ; c. *E. murius* (Ham.).  $\times 5\frac{1}{3}$ .

The genus *Eutropiichthys* is included in the family Schilbeidae (19), of which Pangasiidae may be regarded as a synonym. This family occurs in Indo-China, Siam, the Malay Peninsula and the Archipelago, Burma, India and the tropical parts of Africa.

The Schilbeidae are a family of the Sub-order Siluroidea of the Order Ostariophysi. They are popularly known as Catfishes, on account of their long barbels.

#### Synonymy and Description.

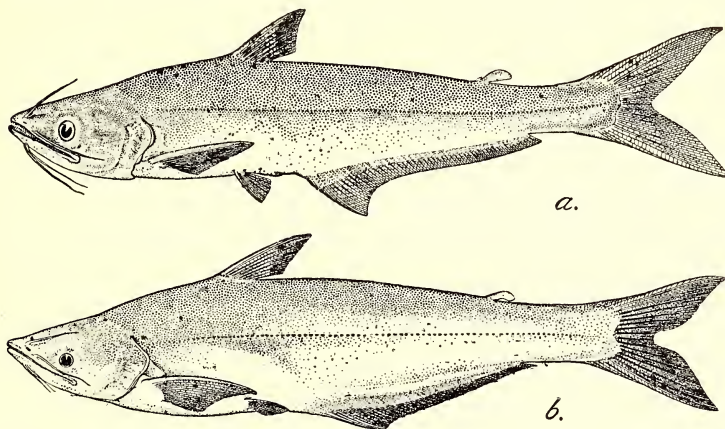
#### ***Eutropiichthys vacha* (Hamilton).**

1822. *Pimelodus vacha*, Hamilton, *Fish. Ganges*, pp. 196, 378; pl. xix, fig. 64.
1839. *Pachypterus punctatus*, Swainson, *Nat. Hist. Fish. etc.*, ii, p. 306.
1839. *Bagrus vacha*, Cuvier and Valenciennes, *Hist. Nat. Poiss.*, xiv, p. 392.
1854. *Bagrus vacha*, Bleeker, *Verh. Bat. Gen.*, xxv, pp. 56, 112.
1862. *Eutropiichthys vacha*, Bleeker, *Versl. Akad. Amsterdam*, xiv, p. 398.
1863. *Eutropiichthys vacha*, Bleeker, *Ned. Tijdschr. Dierk.*, i, p. 107.
1864. *Eutropiichthys vacha*, Günther, *Cat. Fish. Brit. Mus.*, v, p. 38.
1866. *Eutropiichthys vacha*, Day, *Proc. Zool. Soc. London*, p. 306 (dentition).
1869. *Eutropiichthys vacha*, Günther, *Zool. Rec.*, p. 134 (dentition).
1871. *Eutropiichthys vacha*, Day, *Proc. Zool. Soc. London*, p. 713 (air-bladder).
1873. *Eutropiichthys vacha*, Day, *Rep. Freshw. Fish. Fisheries, India and Burma*, p. 270.
1877. *Eutropiichthys Burmanicus*, Day, *ibid.*, p. 490.
1877. *Eutropiichthys vacha*, Day, *Fish. India*, p. 490, pl. civ, fig. 6.
1877. *Eutropiichthys vacha*, Beavan, *Freshw. Fish. India*, p. 131.
1880. *Pseudeutropius goongaree*, Vinciguerra (*nec* Sykes), *Ann. Mus. Civ. Stor. Nat. Genova*, xviii, p. 91.
1889. *Eutropiichthys vacha*, *Faun. Brit. Ind. Fish.*, i, p. 128, fig. 55.
1889. *Eutropiichthys burmanicus*, Day, *Faun. Brit. Ind. Fish.*, i, p. 128.
1890. *Eutropiichthys vacha*, Vinciguerra, *Ann. Mus., Civ. Stor. Nat. Genova* (2), ix, p. 71.

1894. *Eutropiichthys vacha*, Bridge and Haddon, *Phil. Trans. Roy. Soc. London* (B), clxxxiv, p. 201 (air-bladder and skeleton).

1929. *Eutropiichthys vacha*, Prashad and Mukerji, *Rec. Ind. Mus.*, xxxi, p. 175, figs. 2 and 3.

*Vernacular names.*—*Vacha* (Dinaipur, Goalpara, Calcutta); *Tunti*, *Kangon* and *Caingun* (Lakshmipur); *Katla* (Purniah); *Bachoya* (Bhagalpur); *Sugwabachoya* (Patna); *Butchua* and *Nandi butchua* (Orissa); *Chel-lee* (Sind); *Nee-much* (N. W. Sub-Himalaya); *Nga-myen-kouban*, *Katha-boung* and *Nga-myee ying* (Burma); *Nga-glaung* (Myitkyina District, Upper Burma).



Text-fig. 5. Lateral view of a Siamese and a Calcutta specimen of *Eutropiichthys vacha* (Ham.) of about the same length.  $\times \frac{3}{16}$ .

a. Siamese example; b. Calcutta example.

B. 11; D.  $1/7 \mid 0$ ; A.  $3-4/41-52$ ; P.  $1/13-16$ ; V. 6; C. 17.

The length of head is contained from  $5\frac{1}{2}$  to  $5\frac{3}{4}$  times in the total length and  $4\frac{1}{5}$  to 5 times in the length without the caudal. The height of the body is very variable in specimens from different localities; in a specimen from Siam the body is very narrow, but it gradually becomes deeper in specimens from Burma, Chittagong, Calcutta and the Panjab. The depth of the body is contained from  $4\frac{1}{8}$  to 5 times in the total length without the caudal. The snout is invariably pointed, but in very rare cases it is slightly rounded. There is a single, narrow and long fontanel on the head. The occipital process is long and pointed; it is nearly 3 times as long as wide. The eye is large, lateral in position and is situated above the cleft of the mouth; it is provided with broad adipose lids. The diameter of eye is contained from 3 to  $4\frac{1}{2}$  times in the length of the head; 1 to  $1\frac{1}{2}$  times in the length of the snout and  $1\frac{1}{10}$  to 1 in the interorbital distance. The gape of the mouth extends to below the posterior margin of the orbit, and is equal to half the length of the head. The upper jaw is slightly longer. There are eight barbels of varying lengths; as a rule, they are longer in young specimens than in adults. In Burmese and Siamese specimens the barbels are relatively longer. As a rule, none of the barbels is longer than the head, but in young specimens and in some Burmese examples they are considerably longer. The two pairs of mandibular barbels are situated almost

in a row. The teeth are sharp and villiform; those on the jaws form broad bands which are produced backwards at the sides. The vomero-palatine band is considerably broader than the maxillary band and is pyriform in shape; this band is sometimes so close to the maxillary band that the two are indistinguishable from each other.

In Indian specimens the dorsal fin commences slightly in advance of the ventrals, while in Burmese and Siamese examples it is either opposite or slightly behind the origin of the ventrals. The dorsal spine is weak and faintly serrated along its posterior edge; it is almost as long as the head, excluding the snout. The pectoral fins extend beyond the origin of the ventrals; the pectoral spine is roughened externally and serrated internally; the rugosity of the outer surface is more pronounced in Burmese specimens. This spine is as long as the dorsal spine or slightly longer. The anal fin is considerably higher anteriorly than towards its posterior end. The caudal fin is deeply forked with both the lobes pointed.

The body is silvery with the back greyish—a neutral tint of cobalt blue. There are patches of vermilion of different shades on the jaws, upper and lower margin of the orbit, gill-cover, base and rays of the pectoral fin and along the ventral edge of the body. The anal fin has a light neutral tint, while the caudal has a much deeper neutral tint with the dorsal and the ventral edges light. The anterior half of the dorsal fin and the whole of the adipose dorsal are of the same colour as that of the back.

#### *Measurements, Distribution and Variation.*

Day (8) gives the distribution of *Eutropiichthys vacha* as 'From the Punjab through the large rivers of Sind, Bengal, Orissa, and variety *E. Burmanicus* in Burma'. Quite recently Suvatti (20) extended its range to Siam. The Mahanadi river in India probably forms its southernmost limit as it has not so far been recorded from the Deccan.

The Burmese specimens were separated by Day into a distinct variety *burmanicus* which he characterised as follows:

'Variety *Eutropiichthys Burmanicus* has A. 4/55, and its nasal barbels almost reach to the dorsal fin; the maxillary to the middle of the pectoral spine, whilst all the others are longer than the head. The pectoral spine is serrated externally, and reaches the anal fin.'

Day does not mention the precise locality in Burma from where he obtained his specimen or specimens of *E. burmanicus*. Vinci-guerra (24), who examined several examples of *E. vacha* from Mandalay, Bhamo and Bassein did not find any examples of Day's variety. Similarly, Prashad and Mukerji (18) who studied Burmese material did not come across this variety. In the collection of the Indian Museum there is a specimen from Burma (Dup. Cat., No. 39) purchased from Day, which has longer barbels (fig. 1, b) and the anal fin, but does not quite show the characters of *E. burmanicus*. There are two other specimens from Mandalay (Dupt. Cat., Nos. 161, 246) which have long barbels, but in them the snout is somewhat blunt. In view of the above the precise



Measurements <sup>1</sup> in millimetres

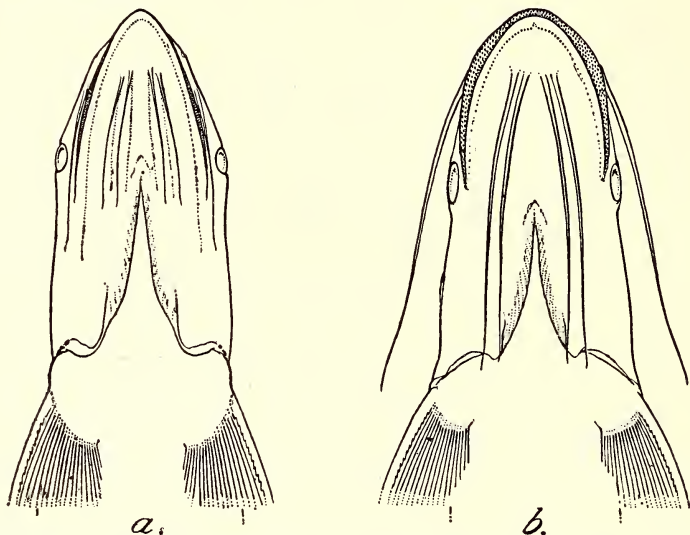
	BURMA		CHITTAGONG					HOOGLI RIVER, BENGAL		
	Manda- lay.	A.S.B. Cat. 486	204.0	175.0	172.0	156.0	310.0	218.0	189.0	166.0
Total length without caudal	131.0	177.0	208.0	175.0	172.0	156.0	310.0	218.0	189.0	166.0
Length of head	24.0	35.0	41.0	36.0	35.0	33.0	70.0	48.0	42.0	37.0
Height of head	19.0	27.0	32.0	26.0	26.0	23.0	56.0	34.0	30.0	27.0
Width of head	11.3	20.0	26.0	23.0	21.0	18.5	45.0	28.0	25.0	22.0
Width of body	9.5	13.0	23.0	19.0	18.0	15.5	42.0	24.0	23.0	21.0
Height of body	29.0	39.0	47.0	41.0	40.0	33.0	75.0	48.0	45.0	40.0
Diameter of eye	8.0	11.0	10.0	9.0	9.0	9.0	15.2	11.0	10.0	9.0
Interorbital width	9.0	12.2	16.0	14.0	14.0	11.0	26.0	18.0	14.0	12.4
Length of snout	8.0	11.2	15.0	12.5	12.3	10.5	21.2	16.0	13.0	11.5
Length of nasal barbel	21.0	27.0	18.0	17.0	18.0	17.0	22.0	19.0	16.0	16.0
Length of maxillary barbel	25.0	30.0	22.0	20.0	20.0	21.5	30.0	22.0	17.5	21.0
Length of outer mandibular barbel	22.0	28.0	19.0	18.0	18.0	18.0	26.0	20.0	17.0	17.0
Length of inner mandibular barbel	23.0	29.0	19.0	19.0	19.0	18.5	27.0	21.0	18.0	17.0
Length of pectoral spine	23.0	35.0	34.0	31.0	29.0	26.0	damaged	38.0	33.0	30.2
Least height of caudal peduncle	11.5	15.0	18.0	14.5	14.5	13.8	30.0	20.8	19.0	18.0

<sup>1</sup> Two more tables of measurements are given on pages 441 and 442.

systematic position of this variety becomes very doubtful, and it seems probable that there are some errors in the description.

Prashad and Mukerji (18) observed that

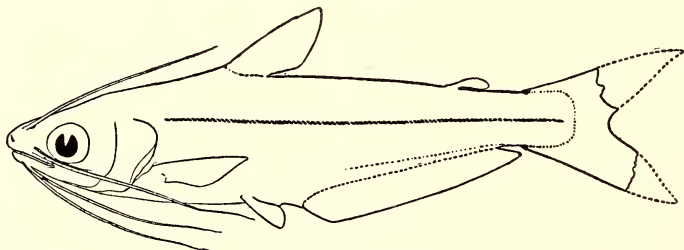
'in addition to Day's *E. burmanicus* there are two more or less distinct forms of *E. vacha* and which can be easily distinguished by their different facies. In the first form the snout is very sharp and pointed and the barbels are short, while in the second form the snout is blunt and more or less rounded and the barbels, though shorter than those of *E. burmanicus*, are considerably longer.'



Text-fig. 6. Ventral surface of head and anterior part of body of a long-snouted and a blunt-snouted specimens of *Eutropiichthys vacha* (Ham.).

a. Long-snouted specimen from Chittagong Nat. size; b. Blunt-snouted specimen (A.S.B. Cat. 484).  $\times 1\frac{1}{3}$ .

In the old collection of the Indian Museum there are specimens (A.S.B. Cat., Nos. 484, 486 and Dup. Cat., Nos. 161, 246) which have a blunt snout and somewhat longer barbels. The locality of the first two specimens is not given, but presumably they also came from Burma. Prashad and Mukerji figure a specimen with a blunt snout and give 'Punjab' as its locality. I have not been able to trace such a specimen in the collection, but it seems probable that they figured one of the old A.S.B. specimens.



Text-fig. 7. Lateral view of a young specimen, 36 mm. in length without caudal, of *Eutropiichthys vacha* (Ham.) from Mirzapore, United Provinces.  $\times 2$ .

There are three very young specimens from Mirzapore, United Provinces, which throw considerable light on the variations discussed above. In them the barbels are very long, the snout is somewhat blunt and the mouth is not so extensive; the outer margin of the pectoral spine is distinctly roughened. These features show that some of the Burmese specimens, characterised by longer barbels and a blunt snout, have preserved the juvenile characters of the species to a certain extent.

The study of a large number of specimens has also shown that in several respects the Siamese and Burmese specimens represent a distinct race, and in this connection attention may be directed to the forms of *Crossochilus latius* (Ham.) and *Labeo dero* (Ham.) that have been differentiated by Mukerji (17) and Hora (14). It would thus appear that though there is a general similarity between the fauna of India and Burma, the two have remained isolated from each other for a sufficiently long period to have evolved into distinct races. In the case of *Eutropichthys vacha* I have collected a considerable amount of material from the river Hooghly, but only a few specimens are available for study from Siam and Burma on the one hand, and from the north-western parts of India on the other. It is not possible, therefore, to recognise here any distinct races or subspecies of *Eutropichthys vacha*.

In order to indicate the probable differences between the Burmese and Indian specimens I give below a table of measurements of two equal-sized specimens, one from Siam and the other from Calcutta (fig. 5).

*Measurements in millimetres.*

	Siam	Pulta, Calcutta
Total length ...	310·0	310·0
Length of caudal ...	58·0	56·0
Length of head ...	69·0	57·0
Width of head ...	31·2	31·2
Height of head ...	40·0	40·0
Diameter of eye ...	14·0	13·5
Length of snout ...	19·0	19·5
Interorbital distance ...	19·0	20·0
Width of body ...	20·0	29·0
Height of body ...	51·0	56·0
Length of nasal barbels ...	28·0	21·0
Length of maxillary barbels ...	30·0	21·5
Length of outer mandibular barbel... ..	28·0	21·0
Length of inner mandibular barbel ...	29·0	21·3
Length of pectoral spine ...	47·0	46·0
Least height of caudal peduncle ...	19·0	24·0

A comparison of the measurements distinctly shows that in the Siamese specimen the head, the pectoral spine and the caudal fin are longer, the barbels are relatively much longer and the eye is larger; but the body is very slender, both in height and in width.

There are in the collection before me two other specimens of equal length, one from the Myitkyina District, Upper Burma and the other from Beas in the Punjab. A table of their measurements is given below.

Measurements in millimetres.

	Myitkyina	Beas
Total length excluding caudal	220·0	220·0
Length of head	46·0	44·0
Height of head	34·0	35·0
Width of head	25·0	27·0
Width of body	18·0	24·0
Height of body	49·0	53·0
Diameter of eye	12·0	11·5
Interorbital width	17·0	18·0
Length of snout	16·0	16·0
Length of nasal barbel	29·0	18·0
Length of maxillary barbel	31·5	20·0
Length of outer mandibular barbel	22·0	19·3
Length of inner mandibular barbel	24·0	22·0
Length of pectoral spine	40·0	38·0
Least height of caudal peduncle	19·0	21·0

Here again, we find the same differences between the Punjab specimens and the Burmese specimens as are noticed above between the Siam and the Pulta specimens. Further, it has to be noted that in the Siamese and Burmese examples the ventral fins are situated opposite the dorsal, whereas in the Indian specimens the dorsal is in advance of the ventrals.

BIONOMICS AND FISHING NOTES.

Thomas (23), who was chiefly familiar with the South Indian forms, makes no reference to *Eutropiichthys vacha*, though he gives an account of *Garua Butchwa*. Lacy (16) gives a general account of *Butchwa* and indicates that it 'belongs to two genera, *Eutropiichthys*, *Pseudeutropius*'. I think, however, that he is mainly dealing with the latter and not with the true *Bāchchā*, for *Eutropiichthys* is not so common in the Punjab rivers as *Clupisoma*. Dhu (10) also gives short notes on *Batchwa* or *Butchwa* but he makes no distinction between *Eutropiichthys* and *Pseudeutropius* (including *Clupisoma*) and recognises 'several species of *Butchwa* in India, *P. garua* (and *P. murius* the cherki) being probably the best known'. The following quotation from Dhu will show the great confusion that centres round the application of the name *Butchwa*:

'There are some seven species of this fish in India. Lately a certain amount of controversy seems to have arisen as to what name *Pseudeutropius Garua*—undoubtedly the most sporting member of the family—should go by. T. P. Luscombe—of the Tackle makers of that name at Allahabad—, whose knowledge of Indian angling is very extensive, calls "Garua" the Baikiri and "Vacha" the Butchwa. And he states:—"Garua" is a surface feeder—good

eating—and generally of a blue and white colour with a large gaping mouth with an upward slant. “Vacha” is a bottom feeder of a light sea green in colour, has four barbels on mouth, which is rather small and round, and not a nice fish to eat.”—Here we have more than one Richmond in the field! I do not know on what authority Luscombe fixes the names. I have referred the matter to more than one reputed ichthyologist, but can get no one to take the responsibility of making a definite statement on the subject! Day, our greatest authority on Indian fish, gives as vernacular names:—“Butchwa” and “Nandi Butchwa” for *E. Vacha*, and calls *P. Garua* “Poonia Butchwa”. That the two fish may be caught in the same waters, and that confusion is liable to arise, the notes on Narora, of Captain Tate, bear out. However until the matter is definitely settled, I let the name stand, as the Butchwa is so familiar a name to many anglers in this country, and so long as fishermen realise that other low class relations may lay claim to the title of Butchwa or Baikiri, they are sufficiently safeguarded in describing their catches.

‘He is a game little fish running up to 2 lbs. in weight, who will take either fly (lake trout size) or small spoon.

‘He is only to be found in the rivers of Northern India. One excellent thing about him is that he will take in coloured water, in fact the time to fish for them is between March and November, when Mahseer fishing is out of the question. They have small teeth which cut one’s gut occasionally, so examine your snoods from time to time.’

From an angler’s point of view it seems highly desirable to clear the confusion about the popular nomenclature of the species, and for this purpose we cannot do better than to refer to the original sources. Hamilton (13) who introduced *Eutropiichthys vacha* in scientific literature for the first time has left behind extensive manuscript notes on the fish and fisheries of the districts he visited. These notes were published by Day (7) and therein we find the following particulars about this fish.

Dinajpur District, p. 29—‘Váchá, Pimelode, a fish about the size of a herring, and considered as very good by the natives.’

Rangpur District, p. 44—‘The Váchá of Goálpára, Calcutta and Dinájpur; the Kágon of Lakshimpur.’

Purniah District, p. 60—‘Kátlá. This must be carefully distinguished from the Kátal of the Bengalis, at Calcutta, usually called Kátlá, which is a species of Cyprin, very common in Ganges and Mahánandá, but scarcely ever found in the Kusí.’

Bhagalpur District, p. 76—‘The Băchoyá is another Pimelode, called Váchá in Bengal, and Kátlá at Náthpur.’

Patna District, p. 88—‘The Pimelodes called Băchoyá at Monghir, at Patná is called Sŭgwábăchoyá.’

In his description of the species Hamilton (13) notes :

‘The *Vacha* is common in all the larger fresh water rivers of the Gangetic provinces, grows to about a foot in length, and is an excellent fish for the table.’ The mouth is described as ‘very large, and descends, with a little obliquity, from the extremities of the head below the eyes.’

The above observations leave no doubt about the identity of *Butchwa*, and from the nature of its mouth it can be readily distinguished from *Garua*.

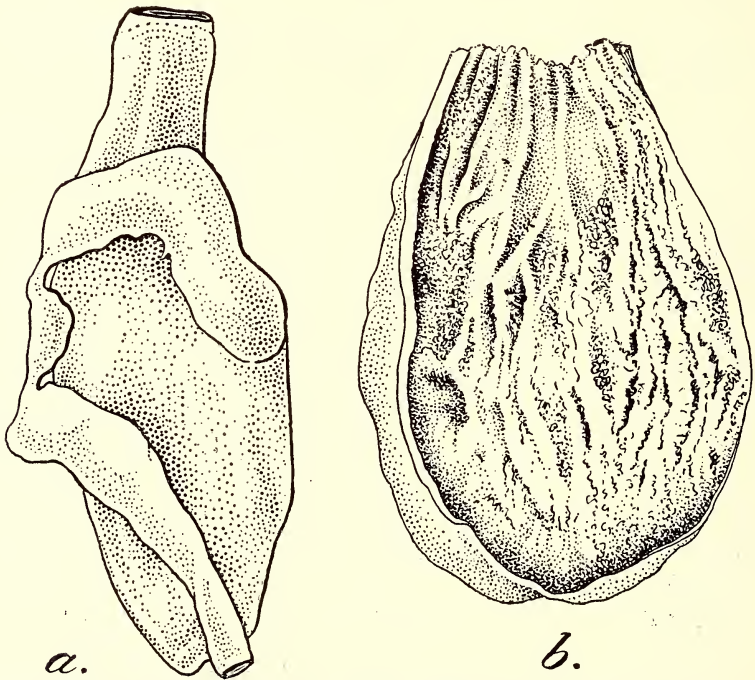
Day also notes that it is good eating. According to Beavan (1), ‘It rises readily to a fly, and affords good sport.’

Dhu (10) in his account of fishing at Narora (pp. 482-491) makes several references to *Butchwa*. Writing of pools below the falls he says (p. 484) :

‘There, too, morning and evening when the Butchwa are on the feed, which will soon be apparent by the water seeming to boil as they chase

and scatter the fry, very good bags may be made by using a fly-spoon or a fly (lake trout or small salmon size). If the near or far gates are shut down, and you can get along the top of the fall, and mount on to one of the aforementioned piers, this is an excellent place to fish from, and very pretty sport may be had with the Butchwa and trout, especially the latter, using a light rod and fly-spoon . . . And catching Butchwa and *Barilius bola* thus side by side, one is able to make a very fair comparison of the two fish, and there is no doubt that weight for weight the trout puts up the finer fight. But from an edible point of view he is a very bad second. Using a lake trout size fly is really the best sport, as the fish take it greedily, and thus lightly hooked made a great fight of it.'

In the form of its body and the large ascending mouth *Bāchchā* corresponds with the 'Indian Trout', and from the above it seems that it can be fished with the type of tackle ordinarily used for fishing *Barilius bola* (Ham.).



Text-fig. 8. Alimentary canal of *Eutropiichthys vacha* (Ham.)  $\times 1\frac{1}{2}$ .

a. The whole of the alimentary canal; b. The stomach cut open to show the nature of its internal wall.

It is a very voracious fish and mainly feeds on other smaller fish or insects. Its alimentary canal is short and the stomach is very capacious. The walls of the stomach are raised into longitudinal folds.

In the river Hooghly boat-loads of *Bāchchā* and *Garua* were found about 40 miles above Calcutta. The two species occurred in almost equal numbers, and both were found by experience to be good eating. It seems that in nature the two species do not compete for food; the former feeds near the surface while the

latter feeds near the bottom. From the abundance of both types of fish in the *Kachha* settling tanks of the Calcutta Corporation Water Works at Pulta it seems certain that the fish can be acclimatised to lakes, large tanks and bheels. The food is so plentiful in the Corporation tanks that the largest specimen I have seen, about 16 inches in total length, was captured from there. These tanks get a continuous supply of fry of all kinds from the water of the river that is pumped into them, but in ordinary tanks *Eutropichthys* may prove very destructive to other smaller fish, and, therefore, its culture cannot be recommended.

Ordinarily *Bāchchā* grows to about a foot in length and attains a weight of about a couple of pounds. Prashad and Mukerji (18) state that 'It is said to inhabit the deeper parts and to grow to a weight of about 30 lbs.' It seems unlikely, however, that the fish attains this weight in Burma. The largest specimen they had was about 13 inches in total length.

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## EXPLANATION OF PLATE.

Lateral view of a Chittagong specimen of *Eutropiichthys vacha* (Hamilton).  
 × ca.  $\frac{3}{4}$ .  
 The specimen and a rough colour sketch were supplied by the late Babu A. C. Chowdhary, a retired artist of the Zoological Survey of India.